



Case report

Stentless repair of left urethral defect with appendiceal interposition: A case report

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ABSTRACT

Introduction and importance: Various methods have been described in the repair of ureteral defects. Here, it is aimed to present the repair performed with appendiceal interposition without any double J stent for the left ureteral defect in a patient who was operated on urgently due to obstruction with metastatic and locally advanced colon tumor.

Case presentation: An 82-year-old male patient was taken to an emergency operation with the diagnosis of ileus. A tumor involving the left ureter was detected in the sigmoid colon, and a 6 cm defect occurred in the left ureter after resection. This defect was repaired with appendiceal interposition without double J stent placement. Hydroureteronephrosis and stricture were not observed in the patient's 2nd and 8th-month follow-up imaging. **Conclusion:** The appendix interposition for left ureter reconstruction is a safe and feasible option. Also, this procedure can be done without any ureteral stent.

1. Introduction

Pathology in any part of the ureter may lead to stenosis or obstruction, resulting in functional loss of the kidney. Avulsion, ischemia, and perforation may occur in the ureter due to trauma, radiation, and surgery [1]. There are different surgical methods according to the localization of the ureteral lesion. In long ureter defects, small intestine, appendix, and colon interposition complications are high, but they are used limitedly for the preservation of kidney functions [2].

In this case report, we aimed to present the repair with appendiceal interposition for the left ureteral defect in a patient who underwent emergency surgery due to obstruction with metastatic and locally advanced colon tumor. This work has been reported in line with the SCARE 2020 criteria [3].

2. Case presentation

An 82-year-old male patient, who was under oncology follow-up due to metastatic and locally advanced colon carcinoma, was admitted to the emergency department with abdominal pain and vomiting. Abdominal examination revealed tenderness and distension. His laboratory test was as shown: white blood cell level: $16 \times 10^3/\mu\text{L}$, serum creatinine: 1.22 mg/dL. Abdominal computed tomography (CT) showed tumor and liver

metastasis in the distal sigmoid colon. Laparotomy was decided. Exploration revealed a tumor involving the left ureter distal to the sigmoid colon and causing volvulus-like closed-loop obstruction in the sigmoid colon on its own, and diffuses metastasis in both lobes of the liver. Resection was decided to prevent closed loop perforation. The tumoral lesion distal of the sigmoid colon and approximately 6 cm of the left ureter was resected. Hartman colostomy was performed due to the colon diameter mismatch. Although proximal and distal ureter were released, it was seen that primary suturing could not be done and it was decided to interpose the appendix. Therefore the 8 cm appendix was resected with preservation of its mesentery (to protect its blood supply) and the stump was ligated with a 3/0 polyglactin suture. Then the appendix tip was opened and its lumen was washed with an abundant isotonic solution. The appendix was anastomosed to the distal and proximal ureter antiperistaltically with 4/0 polydioxanone monofilament sutures, and ureteral continuity was ensured (Fig. 1). Double J stent was not preferred due to stage 4 disease. The operation time was 195 min. The Foley catheter was removed on the 14th postoperative (PO) day and the patient was discharged on the 22nd-day PO. At discharge, his serum creatinine level was 1.1 mg/dL. Hydroureteronephrosis and stricture were not observed in the PO 2nd month CT urography and 8th-month magnetic resonance (MR) urography was taken for control purposes (Figs. 2-3). His serum creatinine level was 0.9

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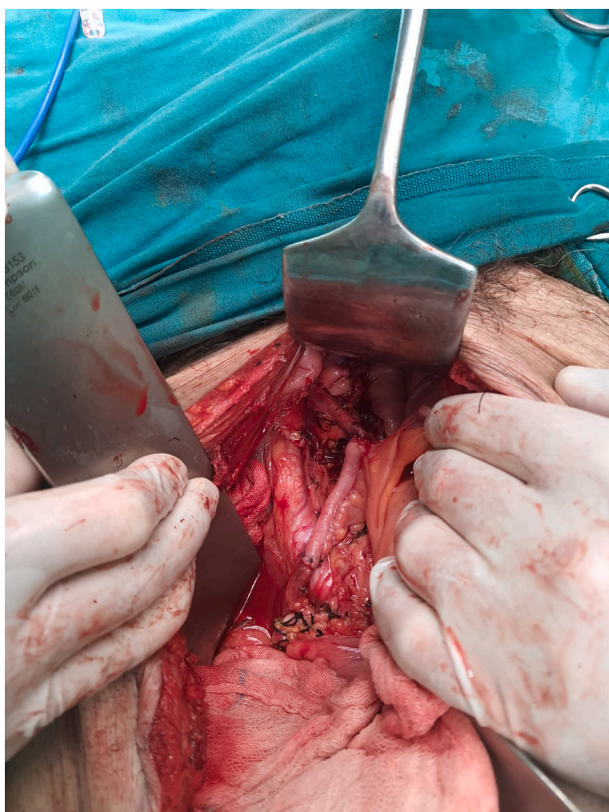


Fig. 1. Operative view of the left ureter reconstructed by appendiceal interposition.

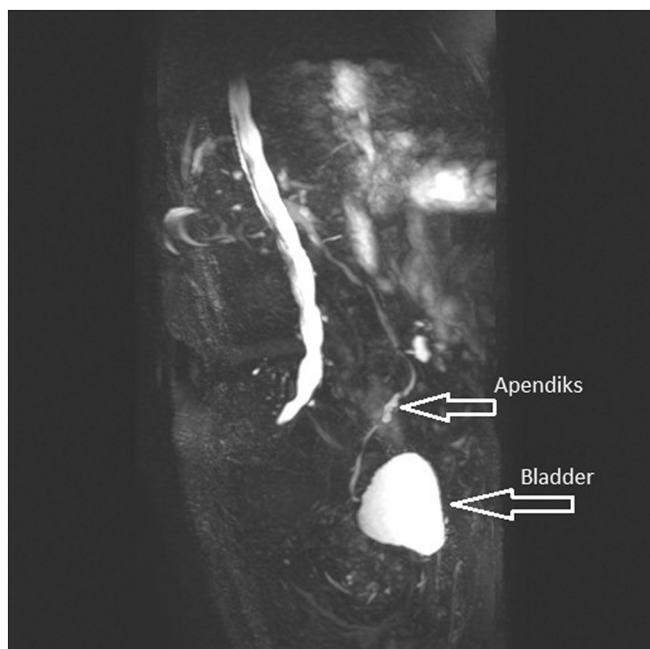


Fig. 2. Follow-up computed tomography urography image in the 2nd post-operative month.

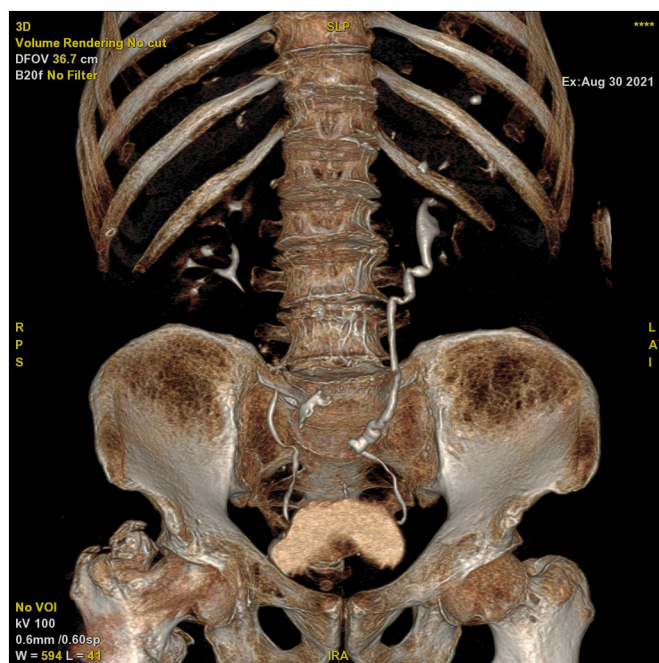


Fig. 3. Follow-up magnetic resonance urography image in the 8th post-operative month.

mg/dL at 9th month. The patient is in the 10th month of PO, and his follow-up and treatment continue in the oncology clinic.

3. Discussion

Melnikoff reported the first case in which the appendix was used as a ureteral substitute in 1912 [4]. There are some advantages over appendiceal interpositions. In addition to being technically easier, intestinal anastomosis is not needed as in ileal interpositions. It also provides convenience because the diameter of the appendix is close to the diameter of the ureter. Absorption complications occur after the use of intestinal structures since it does not have a storage and transfer function like the ureter. This procedure cannot be performed if the appendix is absent, inflamed, or damaged due to appendectomy. In such a case, ileal or colonic interpositions can be applied [2]. The use of appendix is limited in long segment ureteral injuries. In our patient, the ureteral defect was approximately 6 cm. Because the appendix was intact and its length was approximately 8 cm, it was repaired by appendix interposition.

Generally, appendiceal interpositions are performed on the right-side [4–9]. Applications performed on the left side are technically difficult and have a higher probability of complications. There are a limited number of studies in the literature that performed appendiceal interposition to left ureteral defects [5,6,9–11]. In the literature review, it was observed that appendix interposition was applied to the left ureter in 15 of 64 patients [5–12]. Complications have been reported to be higher in appendiceal interposition surgeries using isoperistaltic [13]. In our patient, appendiceal interposition was performed antiperistaltically to the defect in the left ureter, and no technical difficulties were encountered.

Double J catheters are used in the treatment of conditions such as ureteral reconstructive surgery, obstructive uropathy, extracorporeal real shock wave lithotripsy, and obstructive anuria [14]. Ureteral stents are also used during intestinal interpositions applied to ureteral defects [5–8,11,12]. Forgetting and not removing these catheters cause high complications [14]. Complications include 40.5% migration, 68% calcification, 45.5% disintegration, and 13.6% calcification with disintegration [15]. Because of his stage 4 disease, the defect in his ureter was

repaired with appendiceal interposition without using a double J catheter.

4. Conclusion

In cases where primary ureteral repair is not possible, the use of the appendix for left ureter reconstruction is a safe and feasible option in selected adult patients. Also, this procedure can be done without a ureteral stent.

Abbreviations

CT	abdominal computed tomography
PO	postoperative
MR	magnetic resonance

Ethical approval

N/A.

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None.

Author contribution

Emran Avci: Conceptualization, Formal analysis, Investigation, Validation, Visualization, Writing-review & editing.

Semra Demirli Atıcı: Conceptualization, Data curation, Resources, Software, Validation, Writing-original draft, Writing-review & editing.

Ufuk Uylas: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Conceptualization, Formal analysis.

Erdinc Kamer: Conceptualization, Formal analysis, Investigation, Methodology, Project administration, Supervision, Validation, Visualization, Conceptualization, Formal analysis, Investigation, Validation, Visualization, Writing-review & editing.

Guarantor

Uylas accept full responsibility for the work and/or the conduct of the study, had access to the data, and controlled the decision to publish.

Research registration (for case reports detailing a new surgical technique or new equipment/technology)

This study is not a first man study.

Consent

Written informed consent was obtained from the patient for

publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Provenance and peer review

Not commissioned, externally peer-reviewed.

Declaration of competing interest

None.

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